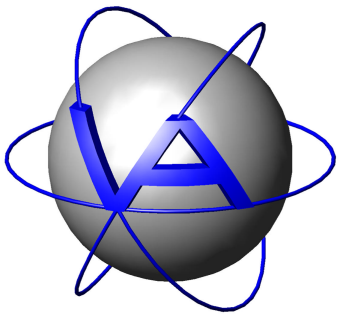
VECTRONIC Aerospace GmbH

Communication • Navigation • Space Applications



Project:

GPS Pro Dog

Title:

User Manual

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Figure 1: Collar Overview

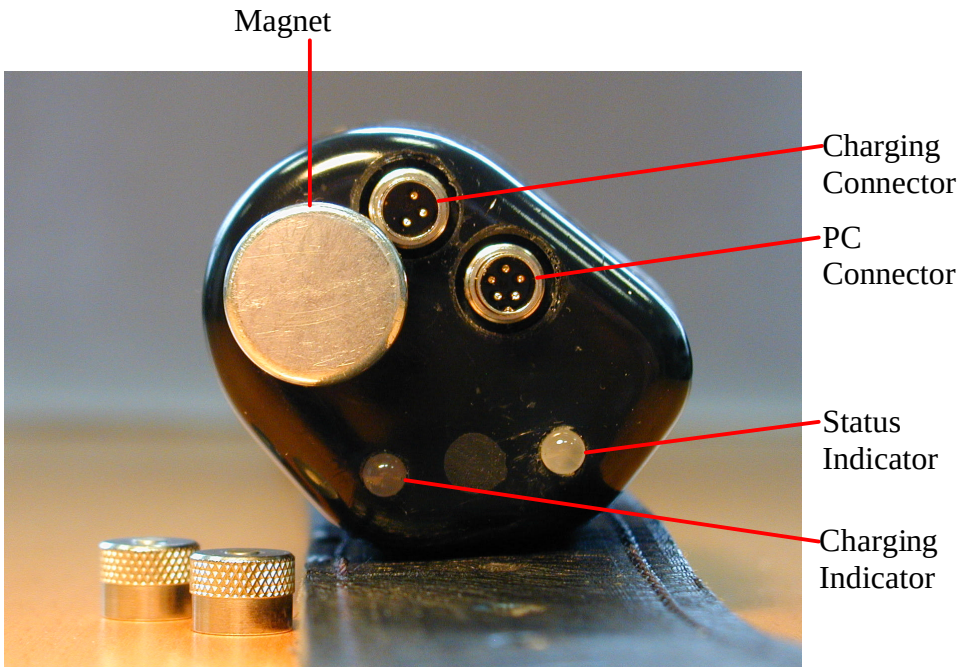

Figure 2: Connector side viewof the electronics box

Figure 3: SIM card cover on the electronics box

1 Product Description

1.1 General

GPS Pro Dog is a device for locating medium sized to large dogs (or other pets of equal sizes) via GPS (**G**lobal **P**ositioning **S**ystem) and GSM (**G**lobal **S**ystem for **M**obile Communications) using a standard GSM mobile phone.

1.2 Supplied Components

- One leather collar with an electronics box and a GPS antenna
- One magnet
- One wall mount power adapter

1.3 Safety

WARNING
The supplied magnet is VERY strong. It may cause injury when attaching any magnetic items to it. It may also damage credit cards, access cards, and monitors. Keep it away from these items. VECTRONIC Aerospace GmbH is not liable for damage caused by non-appropriate use of the magnet.

When the magnet clings to any magnetic material take care of your fingers! It may bruise them. You may not be able to lift it from a flat metallic (iron) surface it is clinging to. In this case push it to the edge of the metal and lift the magnet on one side.
Be especially careful with **credit cards**, **access cards,** and other cards using a magnetic strip! The information on the magnetic strip of these cards will be erased if it is within a few centimetres of the magnet and the card will then be unusable.
Holding the magnet near a **monitor** or **TV-Set** (LCD is not affected) will distort colours and may lead to permanent damage of the **picture tube**. Small distortions may be reset by "De-Gaussing" (see manual of your device), which most devices do automatically when being switched on.

2 Operation

Before operation, there are some preparations to be done.

DO NOT SIMPLY INSERT THE SIM CARD!
This may damage the SIM card or the device.

2.1 Selecting a Network Provider

First you need a SIM-card for the device: This may be a standard card of any provider or a pre paid card. The provider has to provide GSM coverage in the area where you want to use the device. A good resource to check the coverage is http://www.gsmworld.com.

2.2 Preparing the SIM Card

If you didn't order a PC interface you have no possibility to configure the device to the PIN number of your SIM card. So unless you asked for a pre-configured device with your PIN number you have to adapt your SIM card to your device.
You have now two options: Either you disable the PIN check of the SIM card (for theft reasons we do not recommend this, except for pre paid cards) or you change the PIN of the SIM card the devices default PIN, which is "2468".
To do either of them, insert your SIM card in your mobile phone and reconfigure the card according to the phones or providers manual.

2.3 Inserting the SIM Card

Open the SIM card slot cover, using a coin (a five €-cent coin fits very well) rotating it counter clockwise.
Before inserting the SIM card attach the supplied magnet as shown in Figure 2. This will disable all activity of the device. This will take up to a minute in which the status indicator will be lit and/or blink. Wait until the status indicator does not show any activity for at least ten seconds. Now you may insert your SIM card as indicated in Figure 4. A low click-sound should be notable. The SIM card should poke out only about 3 mm and the contacts should not be visible.
If the status indicator does not show any activity at all then the battery may have run empty. You may then also insert the SIM card while the magnet is attached.
You can now close the SIM card slot cover by screwing it sturdy. Don't use any tools other than a coin otherwise you might tighten it to strong.

Figure 4: SIM card insertion: card orientation, insertion, and inserted position

2.4 Removing the SIM Card

What goes for inserting the SIM card applies for removing it, too.
To remove the card push it inward and then release it. It will come out to about 8 mm (level with the housing) so you can easily grab it and pull it out.

2.5 Enabling the Device

After the SIM card is inserted you may enable your device by detaching the magnet. The status indicator should light up in orange (actually its green and red together) for several seconds. Then it should start blinking green in a one second cycle.
The device is now operational.
If the status indicator does not start blinking the battery probably has run empty.

2.6 Disabling the Device

Attaching the magnet as shown in Figure 2 disables the device. The status indicator will switch to orange indicating the shut down of the GSM. After the GSM is switched off the status indicator will go green for a few seconds and then extinguish. Now the device is disabled.
If the device is doing a GPS fix or is processing a incoming call, then disabling will be delayed until the current activity has been finished. After that the described procedure will be run through.

2.7 Charging the Battery

Charging is very simple: First you should disable the device (see chapter 2.6 Disabling the Device). Then plug the wall mount power adaptor into any 110 to 240 Volts AC socket. Select the correct adaptor plug, if the default doesn't fit to your sockets. Then open the charging connector of the device (see Figure 2) and connect it to the wire connector of the wall mount power adaptor. The charging indicator should at least light up orange for a short time.
If it stays orange the battery will now be charged. The indicator will change to green after an hour at the latest and then after about one more hour extinguish. If you wait now for one more hour the battery will fully charged.
If it goes green or even off then the battery has probably switched of for safety reasons a is operational again.
If it goes red, the battery failed prequalification. You should try reconnecting several times. Please be sure to have the magnet attached to the device correctly when doing so. If this doesn't help, please contact our technical support.
While the power adaptor is connected the device is automatically disabled. So it is not possible to make a position request while charging. If no magnet is attached it will be enabled automatically after removing the power adaptor wire connector from the device. This works the same way as detaching the magnet.

2.8 Mobile Phone Preparations

The system will only work, if the Caller Identification for outgoing calls on your mobile phone is enabled. Normally this is the case. You can check it by calling (charge free) ***#31#**. You will get a message indicating the current status. Alternatively you can call another mobile phone and see if you are identified.
If Caller Identification does not work, try the following: Dial ***31#** followed directly by the phone number. For example: The phone number of your device is **+49123456789**, then you would have to enter ***31#+49123456789** and then call. This will enable Caller Identification on outgoing calls only for this call. You may store this prefix together with the devices phone number in the phone book of your mobile phone for easy access.
Alternatively you can enable caller identification for outgoing calls permanently on your mobile phone. Please refer to the phones and/or the provider's user manual.

2.9 Requesting a Position

To request a position just call the number of the device. The device will reject the call after a few rings, take a new position measurement and send an SMS containing the result of the measurement to the number that called.
GPS does not work inside buildings at all! Walls totally block GPS signals. Trees only weaken it. Select a place with an open view to the sky. For the first test you should open the collars belt and lay it flat on the ground with the GPS antenna pointing to the sky (like it is shown in Figure 1). Enable the device and wait until the status indicator is blinking green in once a second. Now you are ready to make the first call.

At the moment the connection is established the status indicator will go orange. After a few seconds, typically about three rings on your mobile phone, your call will be rejected. The device has now identified your phone number. Now the status indicator will blink orange once a second while it is trying to get a GPS fix. Normally this takes only a few seconds (30 or less). If it takes longer it may be due to one of the following reasons:

- It is the first time a GPS fix has been done since a few days
- The battery has run empty in between and the GPS receiver has to start from scratch
- The view to the sky is obscured by buildings and/or trees reducing GPS signal quality

After the GPS fix has finished the status indicator will first go orange with a short break and then green with some breaks in between while sending the SMS message. The time until your phone receives the message depends on your provider.

Table 1: Status Indicator while processing incoming call

Status Indicator	Current Status
- - -	Device idle
———	GSM call detection Caller ID determination (if this fails status goes red for two seconds and the process is cancelled) Call Rejection
- - -	GPS Position fix
—— ——	SMS Sending (if this fails status goes red for two seconds and the process is cancelled)
—— —— -	GSM connection is closed

2.10 Position Message Structure

The position message contains not only the position but also the time at which the given position was taken and if the device has been moved a lot or not. The latter is only available, if ordered. Otherwise it will always be ”`Device inactive`”. If a successful fix has been done it should look like Figure 5.

```
Device active
52N 25.845’
13E 31.529’
29m
18:08:24 UTC
21.12.2004
```

Figure 5: Message of a successful GPS fix

If the position was not successful the message will look like Figure 6. It contains not only the information that the GPS fix of the position request failed but also the last valid position stored in the device. The device makes a fix every ten minutes if it is enabled and stores the last valid position.

```
GPS fix failed!
Last valid position
was:
Device active
52N 25.845’
13E 31.529’
29m
18:10:24 UTC
21.12.2004
```

Figure 6: Message of a not successful GPS fix

If no GPS fix has been reached at all so far the message in Figure 7 will be transmitted.

```
GPS fix failed!
Last valid position
was:
Device active
No valid position
available
```

Figure 7: Message of a not successful GPS fix without having an older GPS fix

2.11 Placing the Device on the Dog

The device should point forward and down with the biggest flat surface when mounted on the dog. This will bring the connector side of the device pointing left and the SIM card cover to the right from the dog’s point of view.
The GPS antenna should sit in the neck of the dog. The electronics box will not be at the lower centre but a little bit to the right to compensate the weight of the collars buckle.

3 Colour Codes

3.1 Status Indicator

Table 2: Status Indicator Signals

Indicated Colour	Current Status
	Device idle
	GSM is being initialised or Incoming GSM call is processed
	GPS Position fix
	(irregular) Checking GSM availability
	(after GSM activity) Activity successful
	(after GSM activity) Activity failed

3.2 Charging Indicator

Table 3: Charging Indicator Signals

Indicated Colour	Charging Status	
	Fast Charge:	Battery is charged with maximum current (Charge is 0% to 70%)
	Full Charge:	Battery is charged with maximum voltage (Charge is 70% to 90%)
	Top Off: or Finished:	Battery is charged with maximum voltage, charging current is already very low (Charge is 90% to 100%) Battery is not charged any more. (Charge is 100%)
	Error: If battery could not correctly be charged.	